

For **AQA**

Name

Class

# GCSE Mathematics Specification

Paper 2 Foundation Tier

# F

Churchill Paper 2D

1 hour 30 minutes

## Materials

For this paper you must have:

- a calculator
- mathematical instruments



## Instructions

- Use black ink or black ball-point pen.
- Draw diagrams in pencil.
- Write your name and class in the box at the top of the page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- In all calculations, show clearly how you work out your answer.

## Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.



Written by Shaun Armstrong

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Answer **all** questions in the spaces provided.

**1** Round 0.02581 correct to 2 decimal places.

Circle your answer.

**[1 mark]**

0.02

0.03

0.025

0.026

**2** Circle the number that is a multiple of 13, 17 and 31.

**[1 mark]**

221

403

527

6851

**3** Write  $1\frac{1}{2}$  as a percentage.

Circle your answer.

**[1 mark]**

0.015%

50%

150%

1500%

- 4 (a) What is the 8th term in this geometric sequence.

1    2    4    8

Circle your answer.

[1 mark]

64                      80                      128                      196

- 4 (b) The 1st term of an arithmetic sequence is 7.  
The 4th term of the sequence is 19.

Work out the 6th term of the sequence.

[2 marks]

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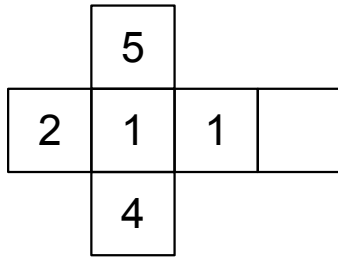
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Answer \_\_\_\_\_

5 This question is about rolling fair 6-sided dice.  
 In each part, the net of the dice is shown.  
 The numbers on some of the sides are also shown.

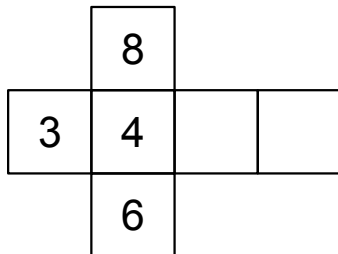
5 (a)



Complete this net so that the probability of rolling a 2 is  $\frac{1}{3}$ .

[1 mark]

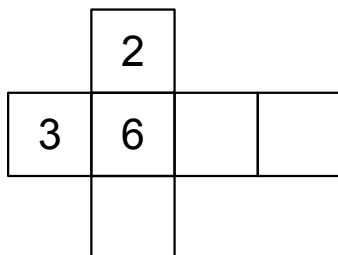
5 (b)



Complete this net so that the probability of rolling a prime number is the same as the probability of rolling an even number.

[1 mark]

5 (c)



Complete this net so that the two numbers on opposite sides always add up to 7.

[2 marks]

6 (a) Solve  $5m = 20$

[1 mark]

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Answer \_\_\_\_\_

6 (b) Solve  $q - 2 = 3$

[1 mark]

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Answer \_\_\_\_\_

6 (c) Find the value of  $3x - 2y$  when  $x = 3.5$  and  $y = -2$ .

[2 marks]

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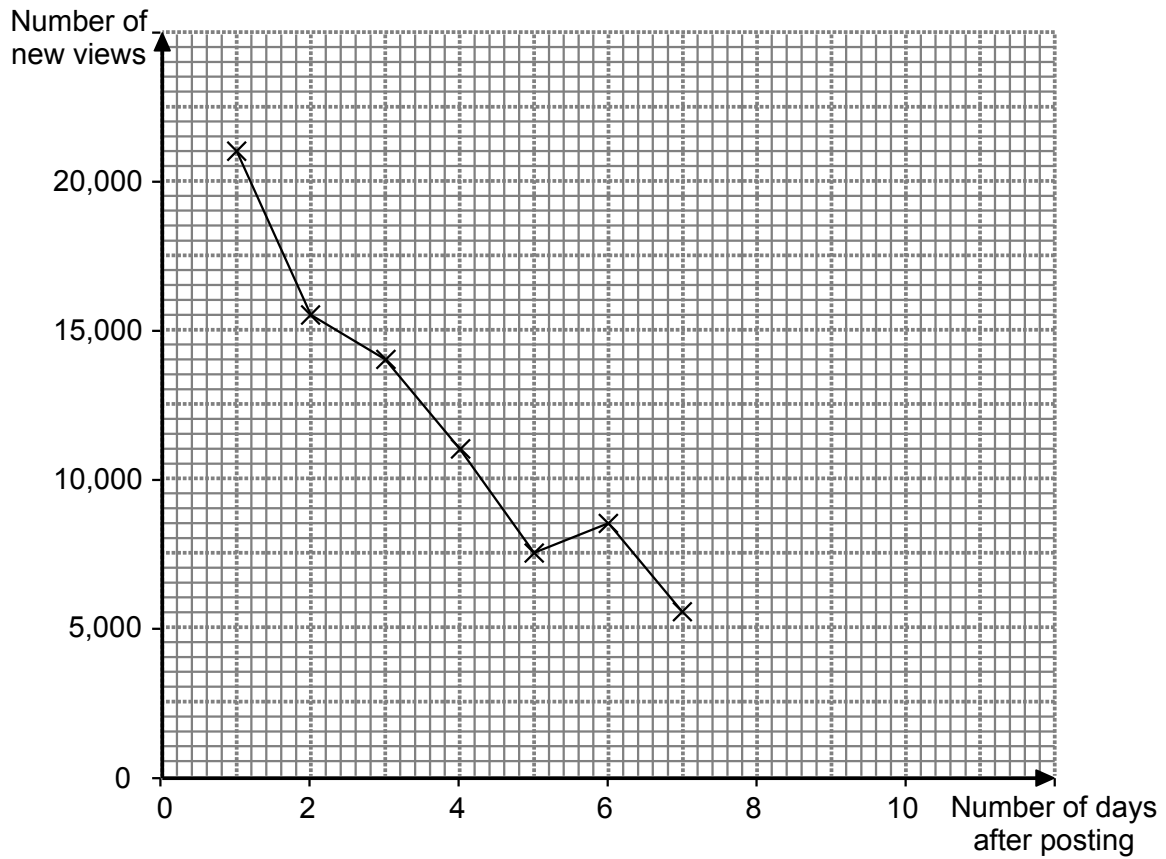
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Answer \_\_\_\_\_

- 7 A vlogger posts a new video online.  
This time series graph shows how many **new** views the video has each day.



- 7 (a) Work out the **total** number of times the video is viewed in the 3 days after it is posted.

[2 marks]

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Answer \_\_\_\_\_

- 7 (b) Describe the trend in the number of new views for the period shown on the graph.

[1 mark]

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Mason says

“Nobody will watch the video more than 10 days after it was posted.”

**7 (c)** Do you agree with Mason?

Explain your answer.

**[1 mark]**

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**8** Lennie is organising a gig.

He spends        £400 on a band  
                      £120 to hire a venue  
                      £320 on hiring staff

He sells tickets for £6.

Lennie wants to make at least £200 profit.

Work out the least number of tickets that Lennie must sell to reach his target.

**[3 marks]**

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Answer \_\_\_\_\_

- 9** 300 people bought tickets to a sports day.  
5% of those who bought tickets didn't come.  
 $\frac{1}{15}$  of those who bought tickets did come but left before the last event.  
The rest of the people who bought tickets stayed until the end.

Work out how many people watched the last event.

**[3 marks]**

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Answer \_\_\_\_\_

**10** Simplify

**10 (a)**  $2(m + 3) - 3m$

**[2 marks]**

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Answer \_\_\_\_\_

**10 (b)**  $3ab \times 2b$

**[1 mark]**

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Answer \_\_\_\_\_

**10 (c)**  $y^3 \times y^3$

**[1 mark]**

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Answer \_\_\_\_\_



11 (a) 200 g of almonds costs £2.30

Work out the cost of 500 g of almonds.

[2 marks]

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Answer £ \_\_\_\_\_

11 (b) For £4, Simon gets 240 g of sliced ham.

Work out the cost of 420 g of sliced ham.

[2 marks]

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Answer £ \_\_\_\_\_

12 (a) Write these distances in order of size, starting with the smallest.

519 mm      0.08 m      48 cm      0.409 m

[2 marks]

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Answer \_\_\_\_\_

12 (b) The weight,  $W$  g, of a fish is 210 g correct to 2 significant figures.

Complete this error interval for the value of  $W$ .

\_\_\_\_\_  $\leq W <$  \_\_\_\_\_

[1 mark]

13 Circle the correct expansion of  $(y + 3)(y - 4)$ .

[1 mark]

$$y^2 - y - 12$$

$$y^2 - 7y - 12$$

$$y^2 - 12y - 1$$

$$y^2 + y + 12$$

14 A box contains coloured discs.

The table shows how many of each colour are in the box.

Colour	Red	Blue	Green	Yellow
Number	10	5	3	2

14 (a) A disc is picked at random from the box.

Write down the probability that it is **not** blue.

[1 mark]

\_\_\_\_\_

Answer \_\_\_\_\_

Some more discs are put in the box.

The ratio of red to green discs is now 3 : 1

14 (b) Work out the least number of discs that could have been put in the box.

[2 marks]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer \_\_\_\_\_

**15** Syed paid £25 to hire a conference room for 2 hours.

Tilly paid £50 to hire the same conference room.

Vinnie makes an assumption and says

“That means Tilly hired the room for 4 hours.”

**15 (a)** Describe the assumption Vinnie has made.

**[1 mark]**

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To hire the conference room, you have to pay a fixed amount and then £5 per hour.

**15 (b)** Work out the number of hours Tilly hired the room for.

**[3 marks]**

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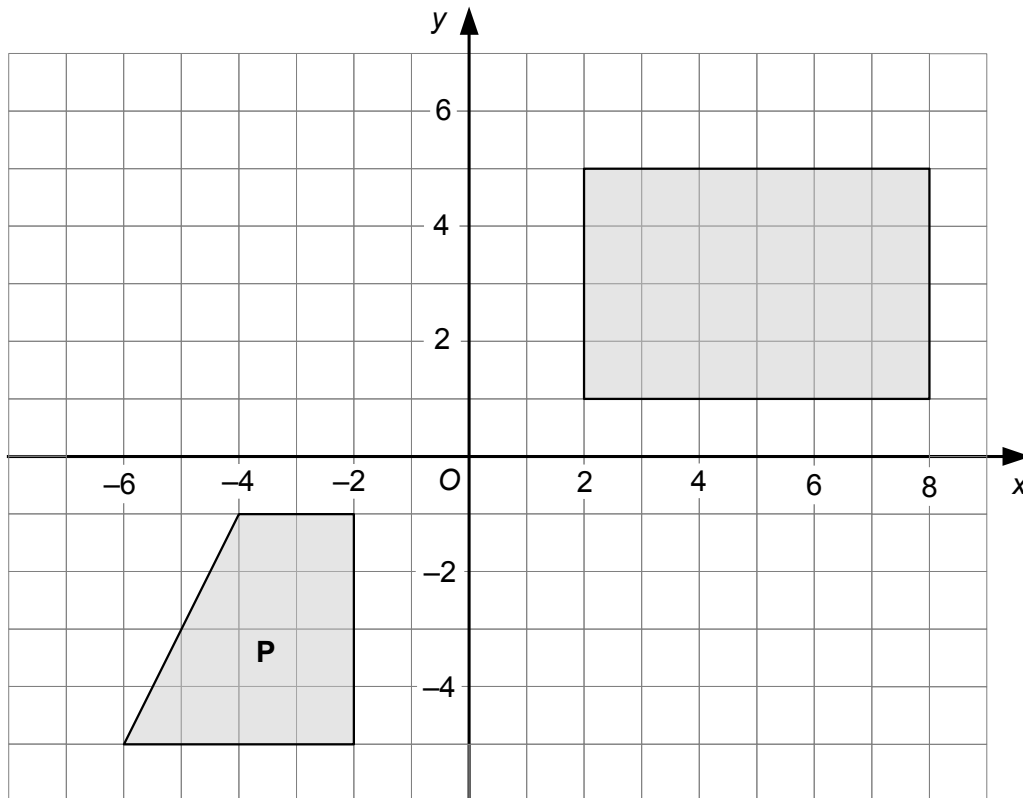
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Answer \_\_\_\_\_ hours

16



Shape **P** is shown on the grid above.

Shape **P** is translated to give shape **Q**.

Shape **P** is rotated to give shape **R**.

Together, **Q** and **R** form the shaded rectangle on the grid.

16 (a) Write down the vector that represents the translation from **P** to **Q**.

[2 marks]

Answer \_\_\_\_\_

16 (b) Describe fully the rotation that transforms **P** to **R**.

[2 marks]

\_\_\_\_\_

\_\_\_\_\_

- 17 A pot contains some pens.  
 $\frac{2}{5}$  of the pens are blue and the rest are black.

Circle the ratio of blue pens to black pens.

[1 mark]

2 : 3

2 : 5

2 : 7

3 : 5

18

1 pound = 16 ounces

2.2 pounds = 1 kilogram

A recipe requires 10 ounces of flour.

What is 10 ounces in grams?

[3 marks]

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Answer \_\_\_\_\_ g

**19** It took 3 people 5 hours to build a garden wall.

Another garden wall is to be built.

The new wall is the same length but twice as high as the first wall.

**19 (a)** How long will it take 5 people to build the new wall?

Circle the answer.

**[1 mark]**

4 hours

6 hours

8 hours

12 hours

**19 (b)** Write down two assumptions that you made in your calculation for part (a).

**[2 marks]**

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20 Circle the expression that is equivalent to  $\sqrt{x^4}$

[1 mark]

$x^{-4}$

$x^{-2}$

$x^2$

$x$

21 Zaid holds up a bag of coins.  
The bag contains only 5p and 20p coins.  
The ratio of 5p to 20p coins is 2 : 1

Zaid says

“If all the 5p coins became 20p coins and all the 20p coins became 5p coins  
the total value of the coins in the bag would increase by £6.”

Work out how many coins are in the bag.

[3 marks]

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Answer \_\_\_\_\_

- 22** Kate makes deliveries for her company.  
The table shows information about the distance she drove for deliveries in one week.

Distance ( $d$ km)	Number of deliveries
$0 < d \leq 20$	25
$20 < d \leq 40$	8
$40 < d \leq 60$	6
$60 < d \leq 80$	3
$80 < d \leq 100$	2

- 22 (a)** Calculate an estimate of the mean distance she drove for deliveries in this week.

**[3 marks]**

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Answer \_\_\_\_\_ km

Martin says

“The range for this data must be less than 90 km.”

- 22 (b)** Is Martin correct?

Explain your answer.

**[1 mark]**

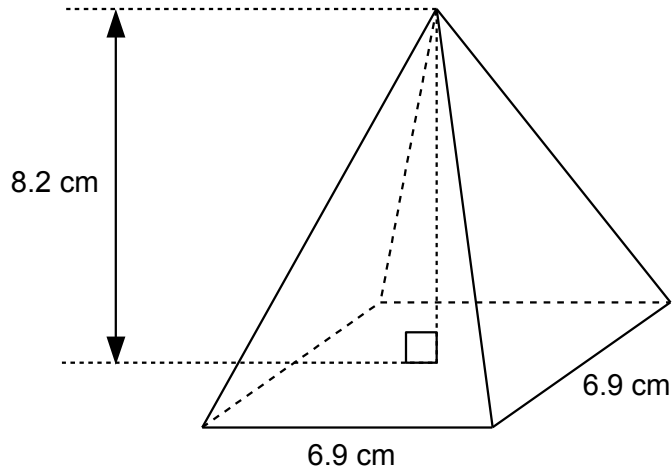
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23



Not drawn accurately

The diagram shows a desk ornament.  
The ornament is in the shape of a pyramid with a square base.

Work out the volume of the ornament.

[ Volume of a pyramid =  $\frac{1}{3}$  × area of base × perpendicular height ]

[3 marks]

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Answer \_\_\_\_\_ cm<sup>3</sup>

**24** A group of pupils had to choose to do either tennis or badminton.

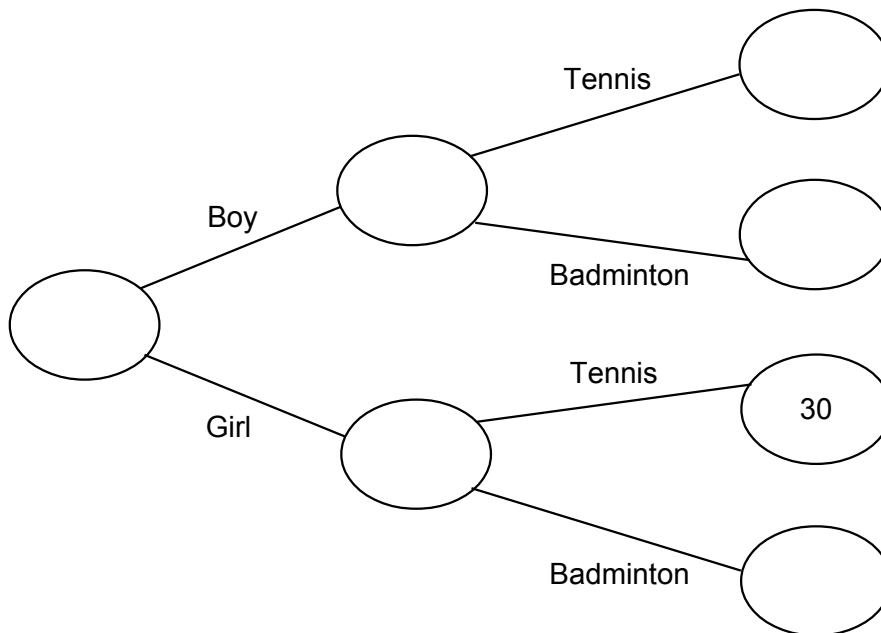
There were 10 more girls than boys in the group.

30 girls chose tennis.

$\frac{3}{4}$  of the boys chose tennis.

$\frac{2}{3}$  of the pupils who chose badminton were girls.

Complete the frequency tree for this information.



**[4 marks]**

**25** Waqar invests £5000 in a savings account.  
The account pays 3.5% per year simple interest.

**25 (a)** Work out how much is in the account after 3 years.

**[2 marks]**

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Answer £ \_\_\_\_\_

**25 (b)** Work out how much more would be in the account after 3 years if it paid 3.5% per year compound interest.

**[2 marks]**

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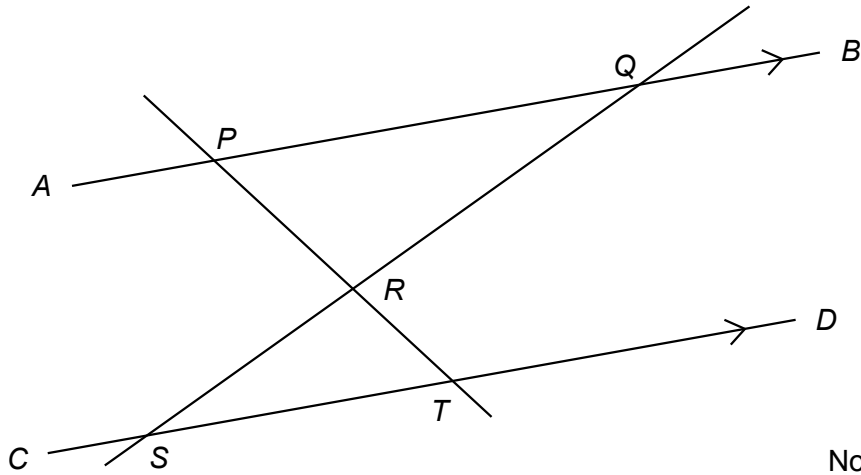
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Answer £ \_\_\_\_\_



Not drawn accurately

The straight lines  $AB$  and  $CD$  are parallel.

$PR = 7.3$  cm,  $PT = 10.9$  cm and  $RS = 9.1$  cm.

Work out the length of  $QR$ .

[3 marks]

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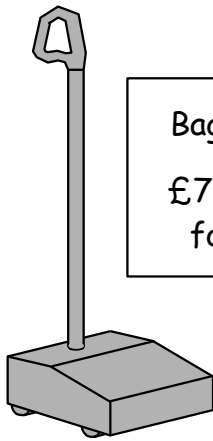
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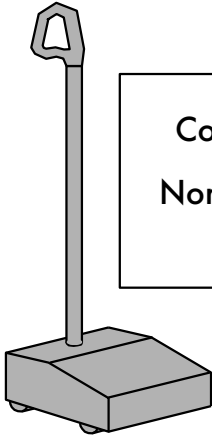
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Answer \_\_\_\_\_ cm

27



Bag-less Hoover!  
£7.25 per month  
for 13 months



Compact Hoover!  
Normal Price £   
35% off!

Two shops are selling the same Hoover.

In the first shop, the customer pays £7.25 per month for 13 months.  
In the second shop, the customer gets a 35% discount on the shop's normal price.

With these offers, the customer pays the same amount in total for the Hoover.

Work out the normal price in the second shop.

[4 marks]

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Answer £ \_\_\_\_\_

**END OF QUESTIONS**